

On phenomenal character and Petri dishes

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Abstract: Michael Tye (2007) argues that phenomenal character cannot be an intrinsic microphysical property of experiences (or be necessitated by intrinsic microphysical properties) because this would entail that experience could occur in a chunk of tissue in a Petri dish. Laudably, Tye attempts to defend the latter claim rather than resting content with the counter-intuitiveness of the associated image. However, I show that his defense is problematic in several ways, and ultimately that it still amounts to no more than an appeal to the unargued intuition that experience could not occur in something small enough to fit in a Petri dish.

Internalists about experience hold that the phenomenal character of an individual's experience is an intrinsic property of the individual. This *phenomenal internalism* is still the dominant view of phenomenal character (or qualia), despite the recent flourishing of externalist resistance (e.g., Byrne & Tye 2006; Noë 2006). The idea that I might experience (say) the smell of coffee while my microphysical duplicate experiences the smell of a wet dog seems very implausible to most philosophers. To most of us, it still looks like phenomenal character has to be 'in the head'.

However, phenomenal internalism has an apparent implication that can seem very troubling. The implication is that, given the right sort of advanced neurosurgery or perhaps *in vitro* cellular growth techniques, and then the right sort of electrical and/or chemical stimulation, it would be possible for a small clump of cells (primarily neurons, but perhaps also supporting tissue such as glial cells) ensconced in a Petri dish to instantiate a phenomenal experience – as it might be, an experience of pain, or heat, or the smell of coffee, or the presence of light.

The *image* associated with this scenario, of a Petri dish containing a piece of tissue which is supposedly undergoing a phenomenal experience, is powerfully counter-intuitive. This 'Petri dish image' is often invoked in casual discussion as a challenge for phenomenal internalism, though it rarely appears explicitly in the literature.¹

The Petri dish image is indeed peculiar. However, a peculiar image is not an argument. It would be nice to see a defense of the claim that there cannot be phenomenal character in a clump of neural tissue in a Petri dish. Michael Tye (2007), to his credit, tries to offer such a defense.² My purpose, however, is to show that the defense is very far from persuasive.

I. SOME PRELIMINARY DISTINCTIONS

Strictly speaking, phenomenal internalism does not imply the possibility of experience in a clump of tissue in a Petri dish. The internalist officially holds only that phenomenal character is intrinsic to the *individual*. This does not entail that it is intrinsic to some *part* of the individual. For example, the internalist could hold that my experience of the smell of coffee necessarily involves a state of my entire body, or at least of my entire brain.

The view that phenomenal character is intrinsic to some small part of the individual's brain is, of course, motivated by the massive functional differentiation that neuroscience has found in the brain. For instance, the sense of smell seems to be subserved by the olfactory bulb, the piriform cortex, and certain regions of the orbitofrontal cortex. It is therefore natural to think that when I smell coffee, the distinctive character of that experience depends only on what is going on in *those* regions of my brain at that time. It is natural, that is, to assume that phenomenal properties depend not on the brain's entire state but on the state of some of its parts – with different parts being responsible for different properties. Call this *phenomenal hyper-internalism*: the view that the phenomenal properties of experiences are intrinsic to parts of the brain.

It is possible to hold phenomenal internalism without hyper-internalism. Someone might say that the character of my olfactory experience of coffee is constituted by the state of my whole brain – so that a neural difference *anywhere* in my brain might suffice to give me a different experience. And they might maintain that this was true of *all* experiences. Such a person would be an internalist but not a hyper-internalist. Call this view *holistic phenomenal internalism*.

Still, while internalism does not entail hyper-internalism, some very plausible empirical premises about the brain's functional differentiation, as just noted, smooth the path between them. Hence the Petri dish image is often held up as a challenge for phenomenal internalism in

general, on the supposition that most or all phenomenal internalists will also be phenomenal hyper-internalists. This is what Tye does.

II. TYE'S ARGUMENT

Tye targets the view that phenomenal character is a 'P-property', which he defines as a property which is either an intrinsic microphysical property or is metaphysically necessitated by intrinsic microphysical properties. (He also argues against the dualist view that phenomenal character is an intrinsic, irreducibly nonphysical property, but that part of his argument does not concern me.) Tye then has us consider a "very simple *token* visual experience v – the experience of a flash of light at time t , say" (p. 307), and argues as follows (premises have been renumbered due to the removal of material concerning the dualist view):

- (1) Microphysical duplicates situated in different surroundings do not differ in their P-properties.
- (2) v is a neural event (or state token).
- (3) A microphysical duplicate of v in a Petri dish has no phenomenal character.

Therefore,

- (4) The phenomenal character of v is not a P-property of v . (pp. 307-308)

The crucial premise (3) presupposes that v will fit in a Petri dish. I will soon take serious issue with that presupposition, but notice right away that only a hyper-internalist will even *entertain* it. Since an entire brain obviously cannot fit in a Petri dish, a holistic phenomenal internalist will dismiss (3) out of hand. Such is not my own view, but I wish to emphasize that the Petri dish image does not challenge holistic internalism. Indeed, the holistic internalist might join with Tye in pressing the image as a challenge to hyper-internalism.

Tye defends premise (3). His initial justification for it is that “patently there is no subject in the dish to have an experience and experiences cannot exist unowned” (p. 307). With an added premise making explicit the above-mentioned presupposition, the defense for (3) goes like this:

(A) There can be no subject in a Petri dish.

(B) Experiences (and thus phenomenal character) cannot exist without a subject.

Therefore,

(C) There can be no phenomenal character in a Petri dish.

However,

(D) A microphysical duplicate of v can fit in a Petri dish.

Therefore,

(3) A microphysical duplicate of v in a Petri dish has no phenomenal character.

Of the three premises, Tye defends only (B) and (D). I find the undefended premise (A) to be the most problematic. I shall discuss it last. I also find (D) highly questionable, and Tye’s defense of it unconvincing. As for (B), Tye’s defense of it is very unsuccessful, but I shall nonetheless accept it. Still, I begin with a brief discussion of Tye’s defense of (B), as this will help to emphasize the sense in which I am accepting it.

III. DOES AN EXPERIENCE ENTAIL A SUBJECT?

In support of (B) Tye offers an analogy: “experiences cannot exist unowned, any more than laughs can exist unlaughed” (p. 307). *Prima facie*, the analogy seems ill-formed. The analogy to an unowned experience is an *unowned* laugh, not an *unlaughed* laugh. Certainly there cannot be an unlaughed laugh; but this supports only the proposition that an experience must be *experienced*, not that it must be *owned* – that is, that it must have a subject.

Perhaps Tye actually meant that an unowned experience would be like an *unowned* laugh. His implicit reasoning may run as follows: a laugh entails the act of laughing (that is, a laugh cannot exist unlaughed); but further, the act of laughing entails a subject who performs the act, and thus *owns* it. Hence there cannot be an unowned laugh.

However, this reasoning is disputable. Imagine a computer program that produces a laughing sound – perhaps pre-recorded, or perhaps computer-generated. Insofar as the program is not a subject, that sound would be an unowned laugh.

Tye might reply that a laughing sound is not a *laugh* unless produced by a subject, so if the program is not a subject then it is not laughing. However, the entire analogy is now seen to be inapt. For while it is plausible that laughing is an intentional act which entails awareness or agency, and thus a subject, it is much more controversial that a simple experience of a flash of light has any such entailment, or that it is even an *act*. So even if laughs cannot exist unowned, this proposition is not a good analogy to (B), for the act of laughing carries a far stronger implication of subject-hood than the experience of a flash of light does.

I am nevertheless inclined to accept (B) on its own merits. After all, it is practically analytic that experience entails the existence of a subject. However, I emphasize that the occurrence of a simple experience entails only an extremely *weak* kind of subject-hood – much weaker than is implied by Tye’s analogy with laughter.

IV. WOULD AN EXPERIENCE FIT IN A PETRI DISH?

Much of the peculiarity of the idea of experience occurring in a Petri dish lies in the very small amount of brain tissue that would be involved. I now turn to (D): Tye’s presupposition that a microphysical duplicate of v would fit in a Petri dish.

Tye is aware of the objection that a Petri dish would be too small to contain v (or its duplicate). He responds as follows:

This seems a very implausible view... for such a simple visual experience as that of a sudden flash of light. Further, it confuses the question of which token physical event is the token experience v with the question of which overall physical setting must be present for that physical event to have the phenomenal character of v or to be an experience at all. (p. 308)

Tye offers two replies here. The first is that v is so simple that its neural substrate *would* fit in a Petri dish. The second is that those who suggest that a Petri dish is too small are confusing v itself with the physical context that makes v possible. I consider these in turn.

It is an empirical question how much of the brain is involved in a given experience. It will, I suspect, be a significant chunk. We may need to picture a container *much* larger than a Petri dish. Yet Tye offers nothing but his own intuition that a Petri dish would suffice.

Further, the intuition seems to involve a sort of vehicle-content confusion – though since I do not want to assume that phenomenal character is intentional, ‘vehicle-character’ confusion would be a better term. Tye assumes that since the experience of a flash of light is *qualitatively* simple, it must also be *physically* very simple, and therefore physically small. Yet there is no *a priori* reason why a qualitatively simple event must be physically simple. Nor is it obvious that a physically simple event (whatever that would mean) must be small in size. It may turn out that experiences are constituted by a sweep of neural activity that extends widely through the brain, or even into the nervous system at large. So rather than a Petri dish, we might do better to picture a large mason jar. Or perhaps something even larger, for it may not be possible to collapse or fold the requisite neural tissue into a space much smaller than the human body itself. Moreover,

we cannot rule out the involvement of non-neural factors, such as hormones (cf. Schechtman 1997), containment of which would require further bodily material.

I now turn to the second of Tye's replies from the passage quoted above. Am I confusing v itself with its physical context? Tye makes another analogy, which I quote in full:

Suppose I launch the rocket by pressing the red button at time t in mission control. My launching the rocket at t just is my pressing the button at t . But what makes my pressing the button a rocket launching is something involving many other events. This is why a microphysical duplicate of my button pressing located against a different background need not be a rocket launching.

Correspondingly, it is certainly the case that without many brain events occurring at t , including activity in the brain stem, there would be no visual experience with the phenomenal character of v . But MEG scans reveal sudden localized activity in the mesial occipital cortex temporally coinciding with v . *This* token physical activity, the physicalist should say, is v . It has the right temporal length and it plays the right causal role. The other events form part of the background without which this activity would not have the psychological character of v . (p. 308)

Tye seems to have in mind Sydney Shoemaker's (1981) distinction between an experience's core realizer (in this case, activity in the mesial occipital cortex) and other brain states that enable the core realizer to occupy the experience-type's causal role. Together with the core realizer, those states comprise the *total* realizer. Only the total realizer suffices for the experience itself. Nevertheless, a token experience is identified with its core realizer, just as a token rocket-launching is identified with the relevant button-pressing.

My response is simply to deny that in suggesting that v would not fit in a Petri dish I am mistakenly thinking of v 's total realizer. Of course, if one *were* to want to house the total realizer, one might indeed need an even larger container. But that is not why I suspect that a Petri dish would be too small. The reason is that I suspect that the core realizer itself might be much larger

than could readily be held in a Petri dish. Tye appears to assume that the evidence he mentions from MEG scans is, if not conclusive, at least highly probative. He does not cite the source of the evidence, so I cannot evaluate it; but I doubt that we can yet say with confidence that localized activity in the mesial occipital cortex, or indeed in *any* specific brain region, is *v*'s core realizer. For example, in a review of studies of the neural correlates of visual consciousness, Geraint Rees (2009) says that "interaction between frontal, parietal, and stimulus-specific representations in visual cortices may be required for visual awareness" (p. 60). Now perhaps the processing which brings *v* to awareness is not part of *v*'s core realizer. But Rees also states that even visual stimuli of which the observer is unaware "can still be subject to considerable processing in many (if not all) areas of visual cortex plus associated subcortical structures" (p. 54). The sort of localized activity that Tye mentions, then – in a specific part of the visual (that is, occipital) cortex – may turn out to be only *part* of the core realizer of *v*. I am not advocating holistic phenomenal internalism, but I am advocating caution in our judgments about the constitution and location of mental states in the brain. (D), I urge, is highly questionable.

V. CAN WE BE SURE THAT THERE IS NO SUBJECT IN THE PETRI DISH?

Of course, I may be wrong about *v*'s physical size. Perhaps its core realizer really *would* fit in a Petri dish. But my final, and most important, criticism of Tye's argument is that the whole matter of size is a red herring.

With (A), Tye claims that there can be no subject in the Petri dish. Yet he gives no account of what a subject *is* that entails that there isn't one in the dish.

Certainly the idea of an experience occurring in a chunk of brain tissue in a Petri dish – and thus of that chunk of tissue being a *subject*, if we assume (B) – is very peculiar. But let us consider where that sense of peculiarity comes from.

Some of the peculiarity surely stems from the sheer *unfamiliarity* of the Petri dish image. Yet we must recall how amazing it is that *any* physical thing, even a fully embodied human, has experiences. It is often observed that were we not so closely acquainted with the phenomenon, we would be hard pressed to believe in it. A clever illustration of this observation is science fiction author Terry Bisson's short story 'They're Made out of Meat'. A race of inorganic intelligent aliens visit Earth, and grapple with the notion that sentience might arise entirely from meat. They find this notion so bizarre and disturbing that they decide to erase the records of their encounter with humans, and pretend that it never happened.³

Keeping this point (about the sheer remarkableness of phenomenal experience) in mind helps to put the Petri dish image in perspective. The image seems bizarre; but so does almost everything about experience *if one discounts one's familiarity with it*. We are naturally used to the idea that humans have experiences. And at this point in our scientific progress we are even becoming used to the idea that just a brain could have experiences. I would suggest, then, that the *extra* bizarreness of the notion of experience occurring in just a clump of cells in a Petri dish may come partly or even wholly from its great unfamiliarity.

Note, though, that in disputing (A) I am not suggesting that we should attribute awareness or consciousness to the contents of the Petri dish. We need not imagine that the chunk of tissue is capable of any other experiences as well as visual ones; or that it is capable of visual experiences more complex than of the presence of light; or that it can represent its experiences to itself. If there is subjectivity in the dish, it will doubtless be of an extremely limited variety.

Thus I do not think we can be sure that there can be no subject in the Petri dish. And this point leads to my most important criticism of Tye's argument, which is that it does not *support* the Petri dish image so much as *rely* on that image. This is because (A) gains its plausibility only *from* the Petri dish image.

Recall that although Tye's case for (B) was unconvincing, in itself (B) is practically an analytic truth. Given (B)'s near-triviality, (A)'s claim that there can be no subject in a Petri dish immediately entails that there can be no phenomenal character in a Petri dish – which is just what the Petri dish image urges. Ultimately it seems to be only this image, and the associated intuition that a piece of tissue that would fit in a Petri dish is too small to instantiate phenomenal character, which provides the substantive support for (3). Yet we should question the very relevance of that intuition to the real issues at hand. When it comes to phenomenal character, we have as yet no reason to think that size, in and of itself, matters at all.

The real question at hand is whether duplicating v 's core realizer would duplicate v itself. Size enters into the discussion of that question only if one assumes that the core realizer is very small, for that assumption prompts the intuition – pumped by the Petri dish image – that an experience could not occur in such a small piece of tissue. But we should ignore this intuition, which is merely an unargued bias in favor of Tye's position. The argument against phenomenal hyper-internalism should not even mention the size of the container in which the duplicate of the experience is housed, because *the container's size alone tells us nothing about the experiential capabilities of what is inside it*. The intuition that the contents of a Petri dish cannot possibly possess phenomenal character is no more justified than the belief of Bisson's inorganic aliens that organic matter cannot possibly possess sentience.

If we remove the assumption that v 's core realizer is small enough to fit in a Petri dish (which, again, serves only to introduce the biasing intuition that something so small could not produce an experience), Tye's argument for the third premise (appropriately modified) runs as follows:

(A') There can be no subject in the isolated microphysical duplicate of an experience.

(B) Experiences (and thus phenomenal character) cannot exist without a subject.

Therefore,

(3') An isolated microphysical duplicate of v has no phenomenal character.

Again, since (B) is all but self-evident, (A') is doing the heavy lifting. In fact, the assertion of (A') would be tantamount to begging the question. For if we read 'subject' in the thin sense that allows the near-analytic reading of (B), then (A') is almost as much in need of defense as (3') itself. However, (A') cannot be defended by appeal to the Petri dish image.

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ENDNOTES

¹ One exception is in Karen Bennett 2003, though she is not targeting phenomenal internalism specifically. Bennett remarks that "the instantiation of the property *being a C-fiber firing* does not guarantee the instantiation of the property *being a pain*", because "C-fiber firings can occur in petri dishes" (p. 485).

² All references to Tye will be to his 2007.

³ An extract from Bisson's story is reprinted on pp. 6-8 of Colin McGinn 1999.